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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/068,727	02/06/2002	Jorg-Achim Fischer	HK-645	8722

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EXAMINER

PHAM, HAI CHI

ART UNIT

PAPER NUMBER

2861

DATE MAILED: 08/21/2003

Please find below and/or attached an Office communication concerning this application or proceeding.

**Office Action Summary**

Application No.

10/068,727

Applicant(s)

FISCHER ET AL.

Examiner

Hai C Pham

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☐ Responsive to communication(s) filed on \_\_\_\_.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 1-25 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-9, 11, 12, 14-16, 18-20, 22, 24 and 25 is/are rejected.
- 7) ☒ Claim(s) 10, 13, 17, 21 and 23 is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on \_\_\_\_ is: a) ☐ approved b) ☐ disapproved by the Examiner.  
If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

**Priority under 35 U.S.C. §§ 119 and 120**

- 13) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some \* c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- \* See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
- a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

**Attachment(s)**

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO-1449) Paper No(s) 3.
- 4) ☐ Interview Summary (PTO-413) Paper No(s). \_\_\_\_.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: \_\_\_\_\_

## DETAILED ACTION

### *Priority*

1. Receipt is acknowledged of papers submitted under 35 U.S.C. 119(a)-(d), which papers have been placed of record in the file.

### *Claim Objections*

2. The following claims are objected to because of the following informalities:

#### Claim 1:

- Line 11, "imaging the laser fiber exits" should read --imaging the modulated partial laser beams--.

#### Claim 12:

- Line 3, "an exit pupil" should read --the exit pupil-- since the claimed element has been defined earlier in the parent claim 9.

#### Claim 25:

- Lines 15-16, "imaging said laser fiber exits" should read --imaging said modulated partial laser beams--.

Appropriate correction is required.

### *Claim Rejections - 35 USC § 103*

3. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

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(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

4. Claims 1-7, 14-16, 20, 24-25 are rejected under 35 U.S.C. 103(a) as being unpatentable over Applicants' Acknowledged Prior Art (referred hereinafter as AAPA) in view of Latta (U.S. 4,295,145).

AAPA discloses a conventional method using a multibeam scanning device for the ablation of film, printing plate or flexo printing plate supported on a rotating drum having an axis, the method comprises locating a number of laser fiber exits beside one another in an optical switch array having number of optical switches corresponding to the number of laser fiber exits, simultaneously emitting a plurality of laser beams, which emerge from the laser fiber exits, modulating the laser beams independently of one another, imaging the modulated laser beams as a multi-spot array on the surface of the material on the drum with an optical system, and laser engraving the surface with the multi-spot array by moving the laser fiber exits, the AOM array, and the optical system together in an axial direction of the drum while scanning the surface with the multi-spot array in a circumferential direction of the drum (see "Field of the Invention" section of the Specification).

However, AAPA fails to teach the optical switch being an acousto-optic modulator, which divides each of the laser beams into at least two partial beams, for forming a line of partially overlapped adjacent spots.

Latta discloses a high speed laser scanning system including an acousto-optical modulator driven at two or more carrier frequencies for scanning with a plurality of

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focused beams simultaneously, wherein the carrier frequencies are selected such that the laser beam spots are overlapped within a small tolerated overlap area.

It would have been obvious at the time the invention was made to a person having ordinary skill in the art to incorporate the multi-frequency acousto-optic modulator as taught by Latta in the AAPA's device. The motivation for doing so would have been to reduce the scan rate required of the deflection apparatus as suggested by Latta at col. 1, lines 30-39.

5. Claim 8 is rejected under 35 U.S.C. 103(a) as being unpatentable over AAPA in view of Latta, as applied to claims 1, 7 above, and further in view of Shinada (U.S. 5,132,834).

AAPA, as modified by Latta, discloses all the basic limitations of the claimed invention except for the applied voltage signals to the AOM being performed with a time offset.

Shinada discloses a simultaneous multi-beam light modulating apparatus including a multi-frequency acousto-optic modulator (18) for dividing the incident laser beam into a plurality of modulated partial beams, the multiple frequencies being applied to the AOM through a delay circuit (56) such that the harmonic distortion is eliminated.

It would have been obvious at the time the invention was made to a person having ordinary skill in the art to modified the AAPA's device with the aforementioned teaching of Shinada. The motivation for doing so would have been to eliminate the harmonic distortion.

6. Claims 9, 11-12, 18-19, 22 are rejected under 35 U.S.C. 103(a) as being unpatentable over AAPA in view of Latta, as applied to claim 1 above, and further in view of Kessler et al. (U.S. 5,745,153).

AAPA, as modified by Latta, discloses all the basic limitations of the claimed invention except for the partial beams intersecting in a vicinity of the entry pupil of the optical system, and the telecentric optical system.

Kessler et al. discloses a laser multibeam printing device comprising a laser diode array generating a plurality of modulated laser beams, which are focused onto a plane of an entrance pupil (front focal plane 24) of the telecentric printing lens (22), which images the laser spots into a close packing of predetermined intensities at the recording medium (col. 6, lines 8-33).

It would have been obvious at the time the invention was made to a person having ordinary skill in the art to provide a telecentric optical system with the arrangement as taught by Kessler et al. to the modified AAPA's device such that the modulated multi-beams are focused onto the entrance pupil plane of the optical system. The motivation for doing so would have been to reduce the divergence of the multiple laser beams and to form well focused and closely aligned beam spots on the surface to be scanned.

***Allowabl Subject Matter***

7. Claims 10, 13, 17, 21, 23 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

8. The following is a statement of reasons for the indication of allowable subject matter: the primary reason for the indication of the allowability of the claimed invention is the inclusion of "aligning the partial beams in a fan shape to cover at least two planes, the points of incidence of the partial beams on the surface in each plane respectively lying on an axis forming an angle  $\alpha$  with the axial direction of the drum, where  $\arctan \alpha = l_x/2l_y$ ", in the combination as it is currently claimed in each of the claims 10 and 17, the inclusion of "the partial beams have an angular spacing and each have a diameter, and which further comprises widening the diameter of the partial beams and reducing the angular spacing of the partial beams in the optical system", in the combination as it is currently claimed in each of the claims 13 and 23, and the inclusion of "said AOMs have converters, and an alignment of said converters corresponds to an alignment of convergent ones of the laser beams", in the combination as it is currently claimed in claim 21, and which are not found taught or fairly suggested by the prior arts made of record, considered alone or in combination.

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**Contact Information**

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Hai C Pham whose telephone number is (703) 308-1281. The examiner can normally be reached on T-F (8:30-5:30).

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Benjamin R. Fuller can be reached on (703) 308-0079. The fax phone numbers for the organization where this application or proceeding is assigned are (703) 308-7722, (703) 308-7724, (703) 308-7382, (703) 305-3431, (703) 305-3432 for regular communications and for After Final communications.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (703) 308-0956.



HAI PHAM  
PRIMARY EXAMINER

August 7, 2003